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NORTHEASTERN LOGGERS' HANDBOOK

by

Fred C. Simmons

PRELIMINARY REVIEW EDITION

FOREST SERVICE
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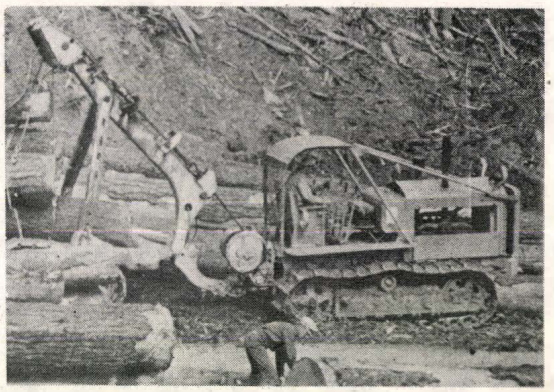
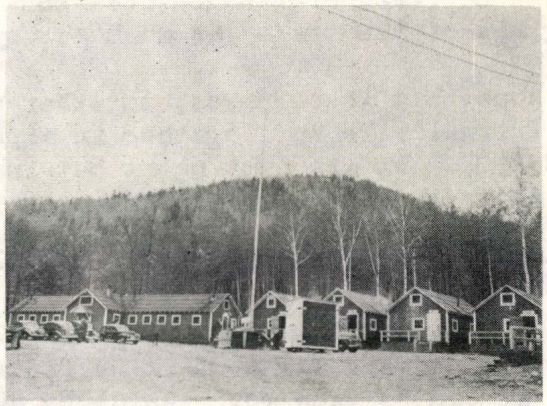


Easier and Safer Work



Greater Production (more pay) and Better Living Conditions

SECTION 10:— GROUND SKIDDING WITH HORSES

NORTHEASTERN FOREST
EXPERIMENT STATION

United States Department of Agriculture

FOREST SERVICE
NORTHEASTERN FOREST EXPERIMENT STATION

614 Bankers Securities Building
Philadelphia 7, Pennsylvania

V. L. HARPER, DIRECTOR

FOREST UTILIZATION SERVICE
James C. Rettie, Chief

If you want to be a mechanic, you will easily find plenty of good books which will tell you what you need to know. You will also find plenty of instructors and training shops.

What about the young man who wants to make his living by logging? For him there is no good source of information to which he can turn. The books and courses on logging are for the logging engineers--not for the fellow who uses the axe and crosscut.

Why shouldn't there be a simple illustrated handbook which will tell the young woodsman (or the green woodsman) what he needs to know about the care and use of his tools and the best of the old and the new techniques of, and devices for logging? He needs to know the "tricks of the trade" as much as anyone.

We hope that these pages, together with other short papers like it, will finally be put together in a printed NORTHEASTERN LOGGERS' HANDBOOK. We are putting it out in this form first because there seems to be an urgent need for this sort of information; and because we need the help and advice of persons who know about logging in our region before printing. We want the experienced logger to tell us what important things we have missed and where our advice is not good. We want the young man going into the woods for the first time to tell us what parts of it he finds hard to understand, to suggest how it can be made more useful to him. We would like the equipment manufacturers to check our recommendations for use of their products and tell us about new devices they are developing.

Please send criticisms, questions and suggestions to: The Director, Northeastern Forest Experiment Station, 614 Bankers Securities Building, Philadelphia 7, Penna. Additional copies of this and other publications in this series can be obtained from the same address.

1946

SECTION 10

GROUND SKIDDING WITH HORSES

By Fred C. Simmons*

The first step in getting forest products to the mill usually involves dragging the tree trunks, or parts of them, from the place where they are cut to a pile or yard where they can be loaded or dumped onto a truck, wagon, or railroad car. This first step, over most of the northeastern region, is called "skidding". In the far north it is more often known as "yarding", and if the logs are dragged in long lengths on the ground it is called "twitching".

Hundreds of different methods of doing this job have been developed through the years, ranging from carrying or dragging the logs by hand to the complicated steam engine and cable systems used in the big timber of the Pacific Coast. Choice among them depends on the size and weight of the timber products to be handled, the type of ground to be traversed and the amount cut per acre, and the total amount to be handled. A big, well-financed company that logs year after year can afford more expensive and specialized equipment than a small contractor or farmer who does part time logging, even though both outfits are logging under about the same conditions.

Another important consideration in choosing the method of skidding is the conservation of the forest for future cuts. Some methods of skidding, like the cable operations mentioned above, are notoriously destructive to all the trees left in the stand, including even the seedlings. But cable logging can be done in such a way as to reduce this damage very materially. Skidding with animals is supposed to be the most conservative way of doing the job. But on some jobs animal skidding is done is such a way that a lot of unnecessary damage is done to the remaining trees. Good trees, left to grow for future cuts, are skinned up by dragging logs against them, opening the way for rot and bugs. Promising young trees are needlessly but for fenders or corduroy, or merely to get them out of the way. So the way in which the skidding is done is about as important as the choice of the method used, in preserving a stand to grow and provide work and wood for the future.

This section covers ground skidding with animals. Later sections will discuss skidding with tractors, and cable logging.

Skidding with animals in the northeast usually means skidding with horses. Oxen were used a great deal in our timber stands but now they are generally considered to be too slow, and unintelligent for most of our logging jobs.

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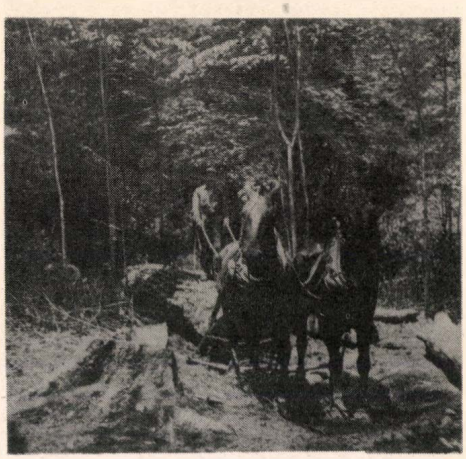
*Specialist on Logging and Milling

In the preparation of this section the author has drawn freely upon the excellent booklet "Efficiency in Skidding of Wood and Handling of Horses". by A. Koroleff, published by the Woodlands Section, Canadian Pulp and Paper Association.

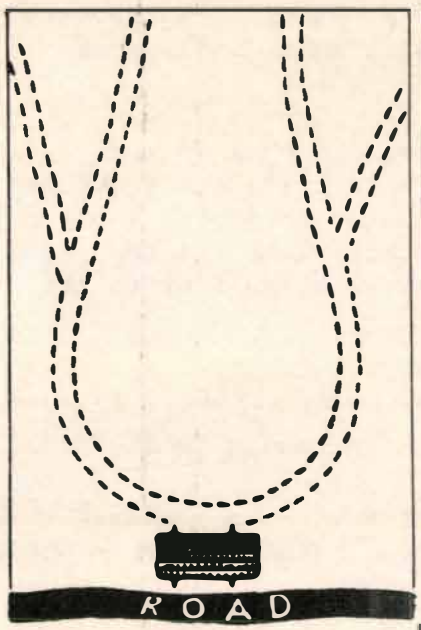


Mules are also slow and they do not seem to be well adapted to working in our climate. Much of the following discussion applies as well to skidding with oxen or mules, as it does to doing the work with horses.

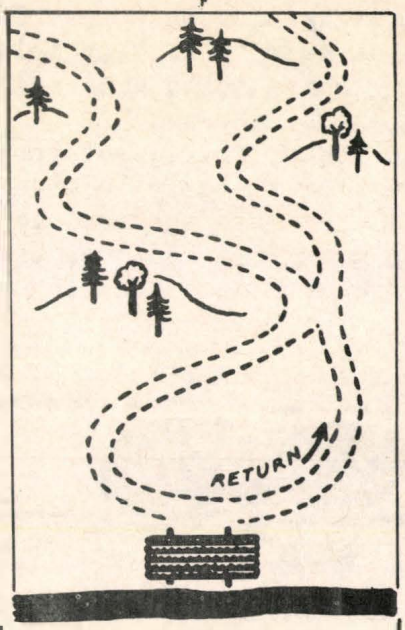
Layout of the Skidding Job

Much time and energy can be saved on skidding jobs by a careful layout of the skid trails by the logging foreman or superintendent. If the slope is not steep, the trails should be as straight as possible with a continuous down-grade pull from the stump to the landing. Sharp turns should, if possible, be avoided. They practically prohibit the skidding of tree-length logs, and even shorter logs will not slide around sharp curves without stopping the team to roll an end back into line with the trail. On steep slopes it is necessary to lay out a trail with reduced grade so that the logs will not slide too fast and run into the heels of the team. A good trail pattern for a gentle slope and for a steep slope are shown in the following sketch. A poor one is also illustrated.

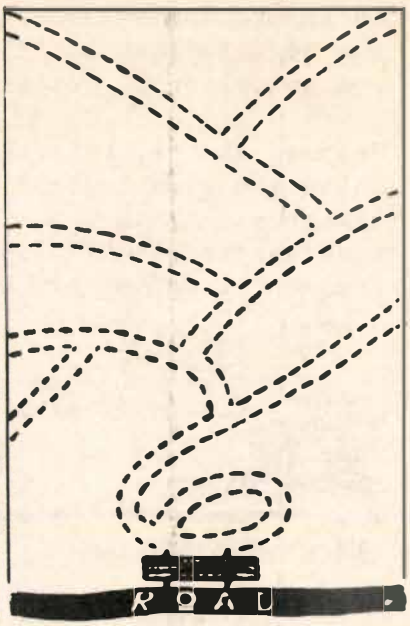
Steep pitches often cause trouble in the winter months when the logs slide easily. Level stretches or sections of uphill grade in the trail greatly reduce the amount of wood that can be dragged in each load. Boggy, or excessively rocky ground should be avoided wherever possible because horses cannot pull well on it. Trails through dense timber or brush require expensive swamping. It is better to go around if that is possible. Timber tracts, of course, include all kinds of land surface and no layout can be designed which will make skidding easy on some of them. The logging foreman has to learn to fit his layout to the land and get the most favorable conditions possible. This problem will be discussed at length in a later section of the Handbook.



GOOD LAYOUT FOR GENTLE SLOPE — STRAIGHT TRAILS MODERATE CURVES



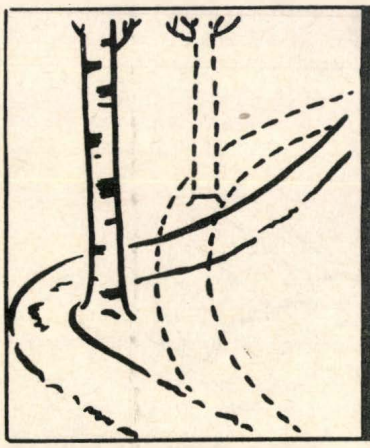
GOOD LAYOUT FOR STEEP SLOPE — ZIG-ZAG PATH TO REDUCE GRADE



POOR LAYOUT FOR GENTLE SLOPE - SHARP CURVES, UNNECESSARY SKIDDING

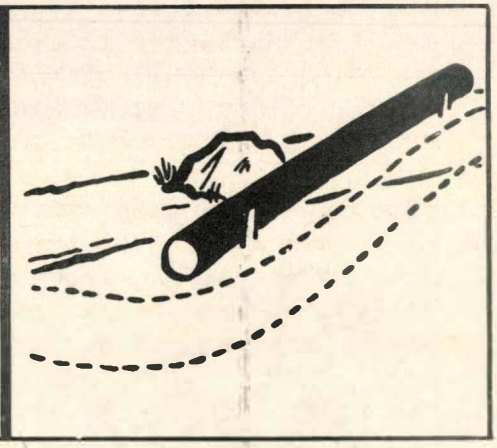
Quite often the teamster can save himself hours of time and avoid much trouble by making some very minor improvements in the trail. The cutting of one small tree, for instance, may eliminate a bad turn. High stumps or large exposed roots can cause the load to become lodged time after time if they are not removed. In some cases the placing of a fender log or two will help in getting the load around a turn or past an obstruction.

In other cases it will be worth while to detour around a soft place or rocky spot. These are bad for the team and may cause the horses



TREE IN THE WAY

EXPOSED ROOT AND HIGH STUMP



USE OF FENDER LOG AT OBSTRUCTION

to injure themselves in struggling through. If a detour is not possible the teamster can sometimes help by filling holes with a little rock and gravel or by covering sharp rocks with rotten wood.

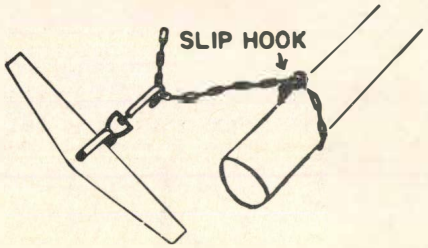
Broomed stumps, battered rocks, frayed-out roots, and churned mud holes are sure indications of a poorly located skid trail and a careless teamster. A man who will not take the trouble to do something about such obstacles will lose much time and then probably lose his temper, frequently ending his work with a serious injury to himself or to his team.

BROOMED STUMP MUD HOLE BATTERED ROCKS

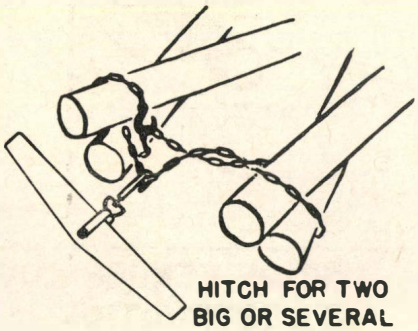
SIGNS OF AN INEFFICIENT TEAMSTER

Equipment for Skidding Light Logs and Poles

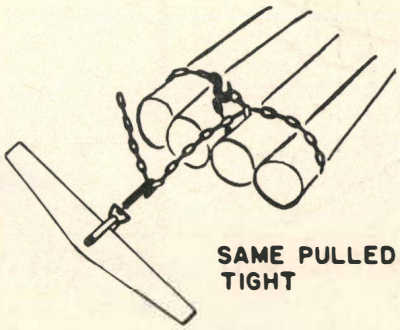
Small sized logs or poles are usually skidded with one horse. The special equipment needed is a ten or twelve foot chain with a slip hook on one end and a grab hook on the other end. Such a chain can easily be wrapped around the end of the log or around the ends of several logs using the hitches shown below:



HITCH FOR ONE BIG OR TWO OR THREE SMALL LOGS

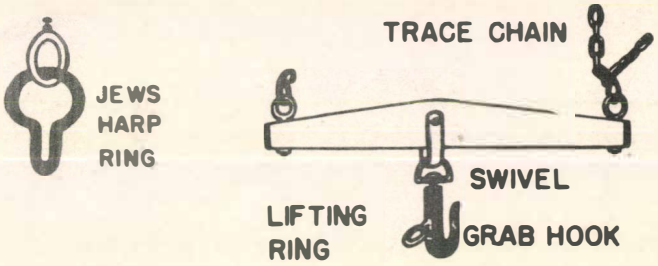


HITCH FOR TWO BIG OR SEVERAL SMALL LOGS



SAME PULLED TIGHT

A stout whiffletree with clevis and swivel grab hook is needed. It should be long enough to hold the traces far enough away from the sides and hind legs of the horse to prevent chafing. The traces are attached to the whiffletree by heel chains just long enough to clear the heels of the horse. These should not be too long; otherwise the lifting action on the front end of the log when the horse is pulling will be lost and the load will dig into the ground. A lifting ring attached to the grab hook is helpful in preventing finger injuries when hooking the log chain to the whiffletree. Some teamsters prefer a jews harp ring on the clevis. It is slower to hook on but less likely to let go of the chain. Either device can be used to grab any link in the skidding chain. The sketch below shows a good skidding whiffletree and its attachments.

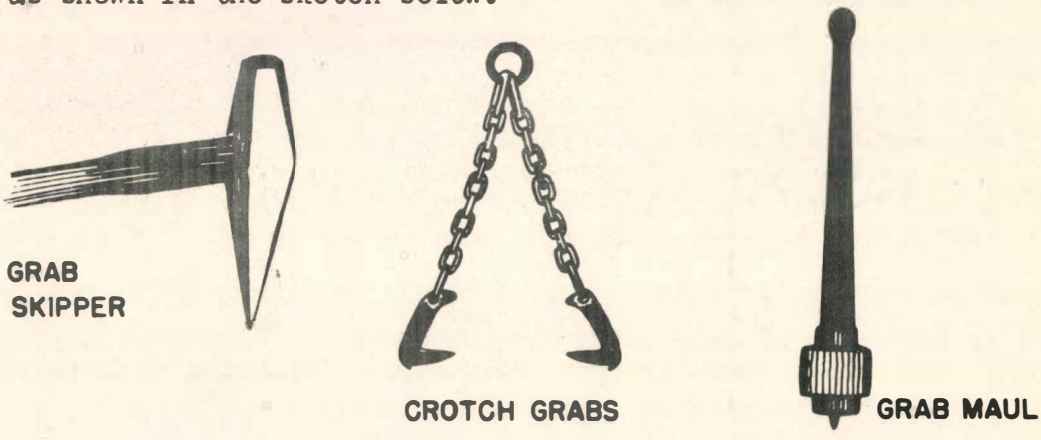


WHIFFLETREE

Equipment for Skidding Heavier Logs

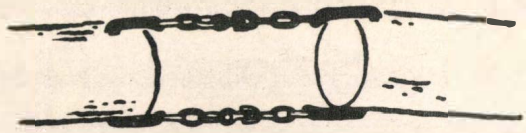
For ground skidding heavier logs it is usually necessary to use a two-horse team. It is possible to use a chain with the same choker hitch that serves for smaller timber. The increased friction of a heavy chain across the underside of the log, however, makes it harder to move. Most skidders prefer to use a crotch grab or skidding tongs in place of the log chain.

The crotch grab consists of two log dogs each attached to about 20 inches of half-inch chain which are linked together by a three-quarter inch ring as shown in the sketch below.

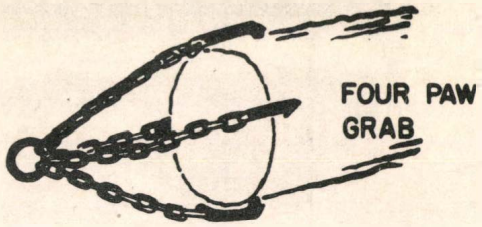


These dogs are pounded into the log with a grab maul, usually one of the type illustrated. The steel ring on this maul is three inches wide by one inch thick, and is untempered. The pin in the end is provided so that the maul can be stuck in a log where it can easily be found on the return trip. At the landing the grabs are detached by a stroke of the pointed end of a grab skipper, also shown here.

For skidding large logs double crotch, or four paw grabs, are sometimes used, particularly in the Appalachians.1/ Grabs are sometimes used with short lengths of chain and a swivel for fastening logs together

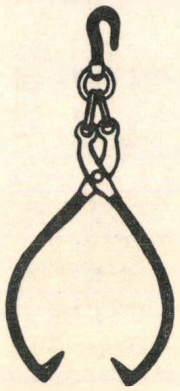


END-TO-END HOOKING WITH GRABS



in trains for skidding out end to end. This is also more of an Appalachian practice than northeastern, although it was formerly quite commonly done in the Adirondacks.

Skidding tongs, illustrated in the sketch below, are somewhat easier to attach and detach than the grab hooks. They are usually made up of octagon steel and are designed for maximum openings of from 16 to 32 inches. Giant tongs which will open up to 60 inches are available on special order. The chief limitation of skidding tongs is that they do not hold too well in frozen timber. This applies also to the crotch grab. For this reason a choker cable or chain wrapped around the end of the log is often preferable for winter skidding.



SKIDDING TONGS

Equipment for Carrying Front End of Skidding Load

A simple sled, known as the go-devil, is frequently used to carry the front ends of the logs off the ground in horse skidding during the summer and early fall, and sometimes in winter.

The go-devil is usually made in the camp blacksmith shop from any available dry hardwood, usually hard maple, yellow birch or beech. It consists of two flattened unshod runners about 6 inches wide and 3 to 5 inches thick and from 6 to 7 feet long. Across these is fastened a four or five foot, six inches by six inches, bunk with

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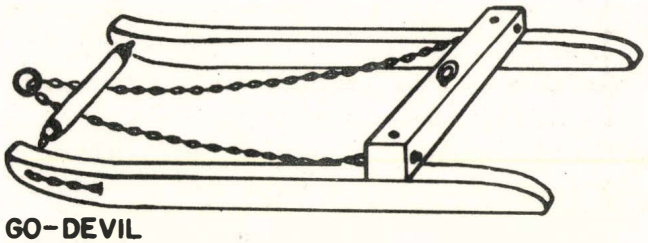
1/ For logs of this size, the northeastern operators are turning to the use of tractors and other equipment which will be described in another section of this Handbook.

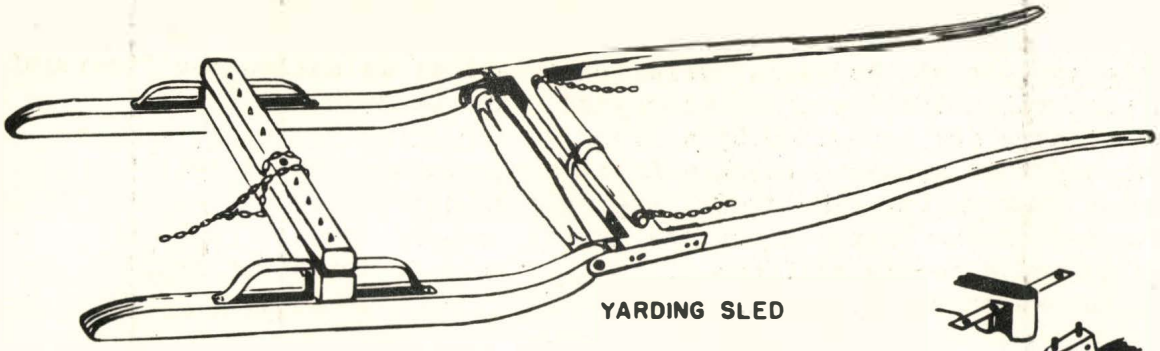
a single bolt on each end. This bunk has a ring fastened in its center through which the log chain is passed. The up-curved forward ends of the runners are connected by a round roller which has a short chain at each end that passes through a hole in the runner and is fastened several inches back on it. The draft rigging consists of chains fastened to each end of the bunk. These chains are brought forward under the roller and joined directly in front of it by a ring to which the hook on the doubletree or whiffletree is attached.



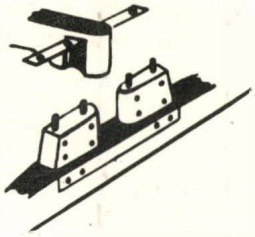
GO-DEVIL

The go-devil has no thills or tongue. It can be turned around in a small space. It is loosely constructed to permit a backward and forward movement on either runner. This allows it to surmount obstructions, and to stand considerable racking. If one runner gets stuck the other can move ahead to start it. The life of a go-devil is seldom more than a season, but the steel and perhaps some of the wood can easily be salvaged and a new one constructed. It is used for skidding distances from 300 feet to a quarter of a mile.

There are a number of more elaborate and more sturdy devices. These are ordinarily used for skidding or yarding over distances exceeding one-fourth mile. The most common one is the yarding sled. This is usually made by the camp blacksmith. The patterns used, especially the manner of fastening the runners to the bunks are many. A typical one is shown on the next page.

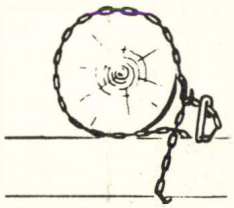


YARDING SLED

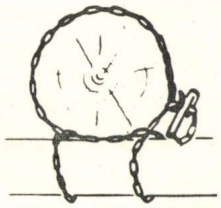


ANOTHER METHOD OF ATTACHING BUNKS

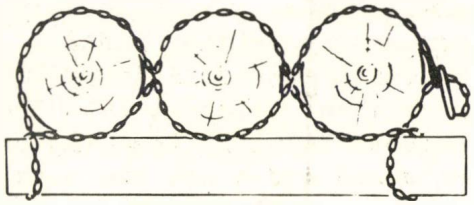
Such sleds are used in the summer, on dry ground, as well as in the snow. The runners and bunks are made from dry hardwood. Oak is preferred but maple and yellow birch are frequently used. The runners are usually shod with 3/8 inch steel shoes, but they may be used unshod. Chains 3/8 inch are used to fasten one end of the logs to the bunk. Three typical hitches are shown here.



SINGLE SCHOODIE



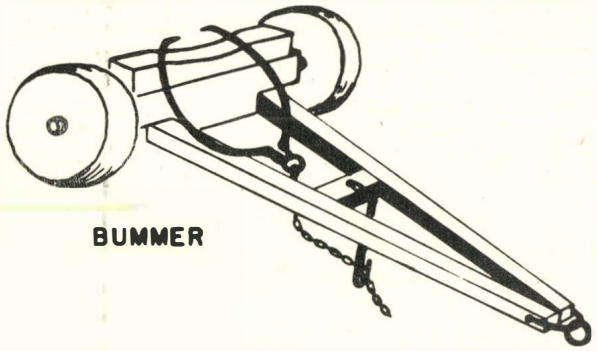
DOUBLE SCHOODIE



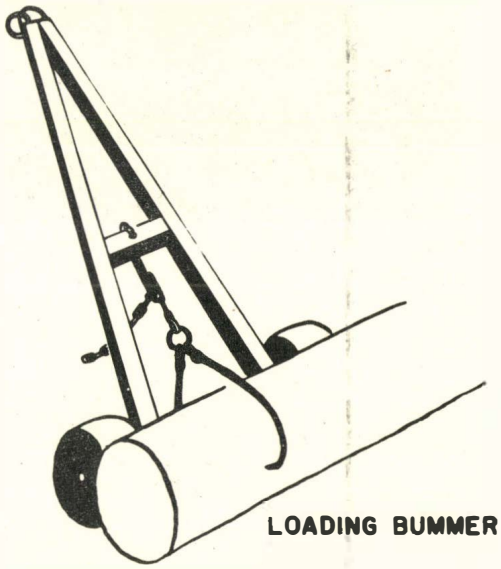
WEAVERS' BIND

Such sleds, with variations in size and construction are called "bobs", "jumbos", "bogans", and "drays", depending on the locality in which they are used.

The bummer, a wheeled device for the same purpose, is not used much in the northeast. It is more typical of the flatland logging in the south, especially Arkansas and Louisiana. It may be adapted for use on some northeastern jobs, however, and so is illustrated here.

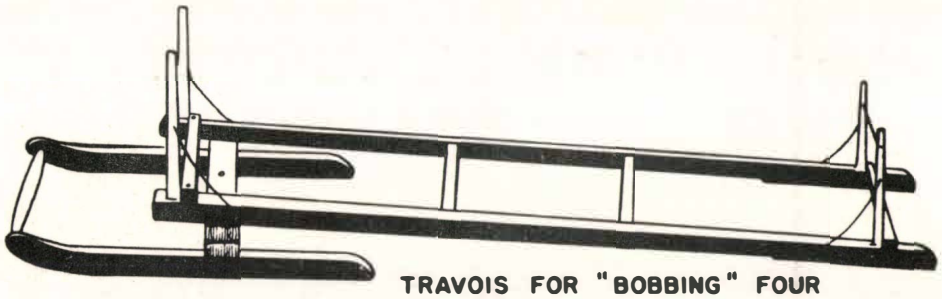


BUMMER



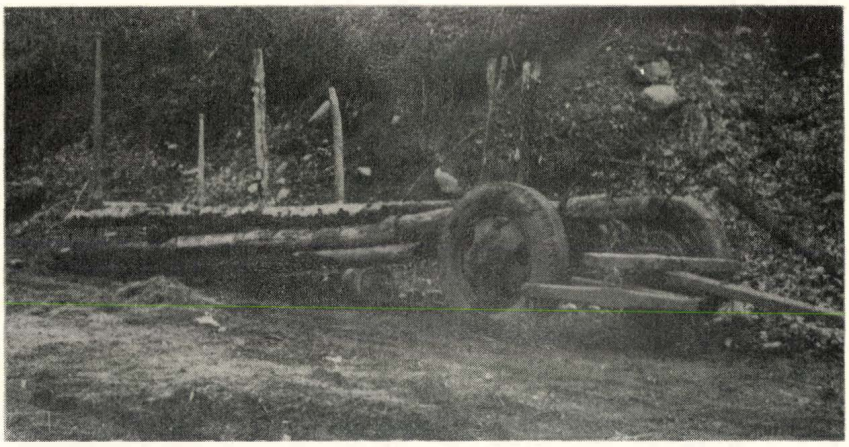
LOADING BUMMER

The wheels are ordinarily sawn from a round section of some wood with interlocked grain, such as white elm, sycamore, or black gum. Various devices are also used to carry the front end of a load of short bolts. One of these, illustrated below, is called the "travois". This uses two long poles that drag from the bunk.



TRAVOIS FOR "BOBBING" FOUR FOOT WOOD

A travois can also be made with old automobile wheels which roll more easily and shake the load less than would be the case with metal-tired wheels.



Operators are finding, however, that the cheapest and best method is to cut wood in long lengths in the woods, skid out these long lengths, and then cut them into shorter lengths desired at the landing beside the road, or at the mill. Skidding of short-length wood is due to become less and less common. Consequently travois are much less frequently used than they were a few years ago.

Devices Which Prevent Logs or Bolts From Picking Up Dirt and Gravel

Wood turneries and several other types of wood using plants cannot efficiently use logs and bolts that have been dragged on the ground. Imbedded dirt and gravel cause too much trouble with bolter saws and other equipment. In logging this material, it is necessary to keep the wood off the ground all the way from the stump to the mill. The primary move from stump to landing or road is usually done by means of the "scoot". This is a longer heavier wooden sled, with two bunks to carry the log completely off the ground. A typical one is illustrated below.

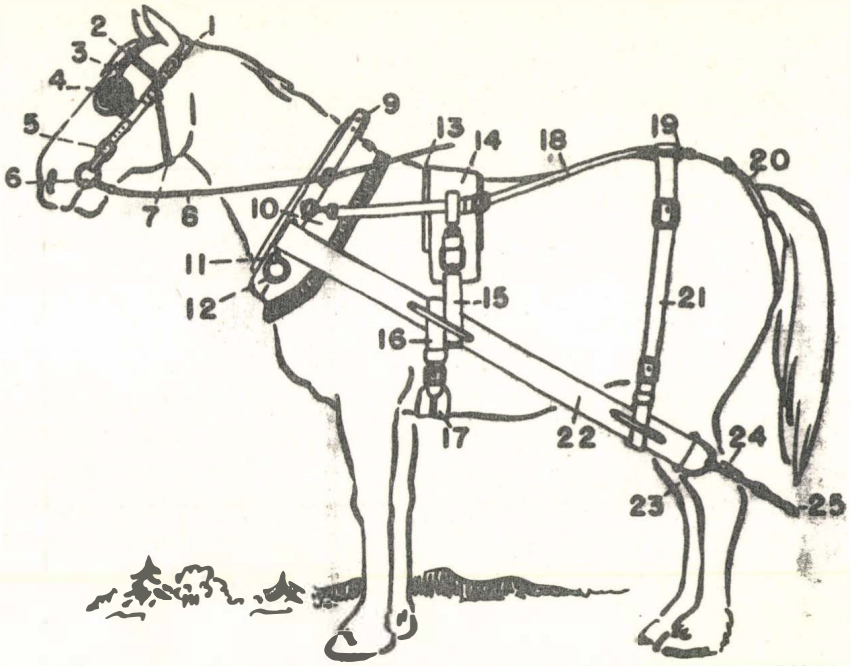
The scoot is low, and can usually be loaded with a peavy, perhaps with the aid of a couple of short skids. The runners are of hardwood, often 6 by 8 inches or for tractor use even 8 by 10 inches in cross section. Scoots are being pulled by tractors more and more in this region. The smaller one-horse scoots are used most frequently in the logging of white birch for turning squares.

Such small scoots are also used in handling 4-foot or 52-inch wood for the distillation and pulp plants, and for handling hemlock and chestnut oak bark for tanning. For such use the scoot is sometimes fitted with a platform of poles or boards and side racks in which the short wood or bark can be piled more readily.

Logging Harness

Aside from the horses themselves, the most expensive equipment used in horse skidding is the harness. The sketch on the next page shows a good harness for one-horse skidding. It should be of good quality, should fit the horse properly and it should be kept in good repair and adjustment.

The horse applies his energy to move the load by pushing his shoulders against the collar. It is, therefore, very important that the collar shall fit properly. It should be selected and fitted to the horse by a man who knows what he is doing. Never should a collar be soaked in water and pounded into shape with a hammer. This will certainly ruin it.



SKIDDING HARNESS: 1—CROWN; 2—FRONT; 3—WINKER STAY; 4—BLIND; 5—CHEEK; 6—BIT; 7—THROAT-LATCH; 8—REINS; 9—HAME; 10—COLLAR; 11—BOLT DRAUGHT; 12—LOWER HAME RING; 13—BACK PAD FELT; 14—BACK PAD; 15—BACK PAD BILLET; 16—BELLY BAND BILLET; 17—BELLY BAND; 18—BACK STRAP; 19—BREECHING CENTRE; 20—CRUPPER; 21—COMBINED HIP STRAP AND TRACE BEARER; 22—STRAIGHT TRACE; 23—DEE WITH DETACHABLE BOLT; 24—PINERY HOOK; 25—HEEL CHAIN

Minor adjustments can sometimes be made by moistening the collar and pounding it lightly with a smooth wooden mallet. The collar should fit reasonably well before any adjustments are attempted.

When a collar is fitted properly there should be room enough at the throat to insert the palm of the hand, and room enough at the side to insert two fingers.

The point where the traces are attached should be one third of the distance from the horse's shoulder joint to the upper end of the shoulder blade. A horse can pull more easily and is less likely to get shoulder galls if the draught points are correctly placed.

The bridle should be adjusted so that it will admit three fingers to be inserted under the throatlatch. The bit should not be so tightly drawn that it wrinkles the horse's mouth. The belly band should permit the easy insertion of the flat of the hand between the band and the horse's belly.

Repairs to the harness should be carefully made, using copper rivets with burs or a sewing awl. The term "haywire logger" is one of contempt throughout the country, and it is most frequently applied correctly to the man who attempts to repair his harness with that universal woods commodity --haywire. He is paid off in loss of time on the job and injuries to his horse. The harness should be cleaned regularly and kept properly oiled with good quality neatsfoot.

Skidding Horses

The best horse for woods work is one between five and ten years old weighing between 1,300 and 1,800 pounds. Legs and neck should be short and stocky with well developed muscle in the shoulders and hips. A quiet and unexcitable temperament is very important. Horses that are excitable and nervous cannot move half the load that can be handled by a team that pulls quietly and slowly. Even the best tempered horse can, however, quickly be spoiled by ill treatment. For this reason the care and handling of the horses is of utmost importance.

With the increasing use of tractors in logging, horse work is being more and more confined to the skidding of light logs. For such work, a single horse is very often better than a two-horse team. In working with a single horse, most teamsters find it best to direct him by the spoken word only. Use of reins is necessary for a few days until the horse becomes familiar with the commands of the teamster; after that the reins can be left in the barn or done up on the hames.

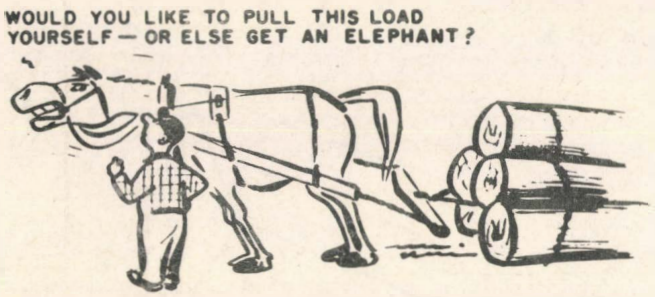
Skidding requires more intelligence on the part of the horse than does most routine farm work. He must work in a narrow trail which may have many obstructions. He must back into awkward places and pull long bulky loads which roll or switch around unexpectedly. It is very important that horse and teamster understand one another perfectly. Commands should be given in calm normal speaking tone. Shouting is entirely unnecessary. One simple set of commands and only one should be used. A horse cannot be expected to understand three or four different words for the same movement. In the farming sections of the northeast, the commands most frequently used are: Giddap (Go ahead), Gee (turn right), Haw (turn left), Backup (move backward), Go slow, and Whoa (stop). The French-Canadian teamsters are more apt to be saying: Avance or Marche (go ahead), A droit (turn right), A gauche (turn left), Doucement (go slow) Halt (stop). Other words for these same movements in both languages are also used. Added to these are similar commands in Scandinavian, Polish, Finnish and Austrian, and even in American Indian dialect. It is

surprising that logging horses become confused.

Another bad practice, which is usually the mark of an inexperienced teamster, is stringing a series of commands together in advance of the time when the horse could possibly execute them. Even Army officers have found they cannot do that without getting their men confused. The thing to do is to give the command just at the time the order is to be executed. If the horse is to start, then swing to the left, then move backward, don't string the commands together or give a second before the horse has had time even to start to execute the previous one. Tell him to "Giddap" then "Haw", and finally, after he is in the proper position, to "backup". A good teamster, in this manner, will place horse and logs exactly where he wants them without resort to shouting, losing his temper, or beating the horse.

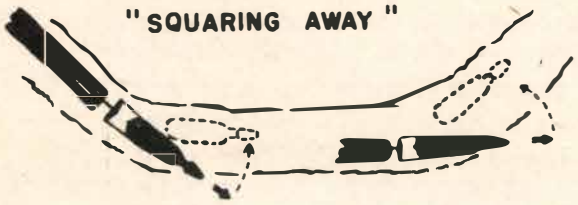
Beating is more often a reflection on the man than it is on the animal. Many good woods horses are ruined by impatient, inefficient teamsters, who lose their temper. And quite frequently such teamsters are injured, perhaps unintentionally, by the animals they have made high-strung and temperamental by their abuse. A horse should never be hit around the head or kicked in the belly. Jerking on the reins, when they are used, is about as bad. Beating an animal to cause injury to it is a criminal offense in most states.

A slight twitch on the rump, immediately when the horse has disobeyed an order or is slow in executing it is sometimes necessary, but if the switching is postponed so that the animal does not connect the punishment with the act which brought it on, it does no good.



The teamster should learn accurately to gauge the size of the load he is asking his horse to pull, and not demand more than the animal can accomplish. This means consideration of the ground over which the load is to be pulled as well as its bulk. A horse can pull a much heavier load over a good surface on a gentle downgrade than it can on the level, around turns or through the mud. Careful selection of the route to be followed in getting to the skid trail often results in a great deal more accomplished at the end of the day.

The teamster should be alert to help his horse as much as possible. In pulling a load around sharp turns he should stop the animal and have it "square away" by swinging right or left once or twice so that it has a direct pull in the trail all the time. He should give the animal a chance to rest when needed, and see that it has opportunity to drink at proper intervals.

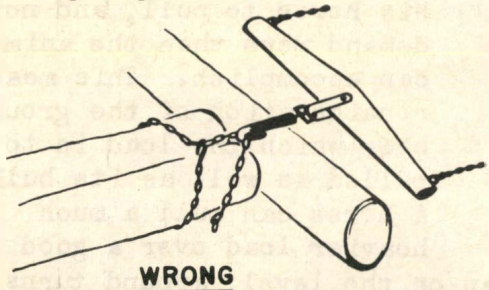


In getting the horse into position to hook on the load, the teamster should avoid long stretches of backing up. Backing is not natural to a horse, and it is especially hard in rough woods terrain. Therefore, whenever possible, the horse should be turned just prior to hooking on the load, in such a way that the grab hook on the whiffletree will be as close as possible to the log. Short hookups are less apt to catch behind obstructions in the woods, and are easier to pull. Some teamsters shorten the heel chains by a link or two for taking the load, and lengthen them again at the landing for going empty.

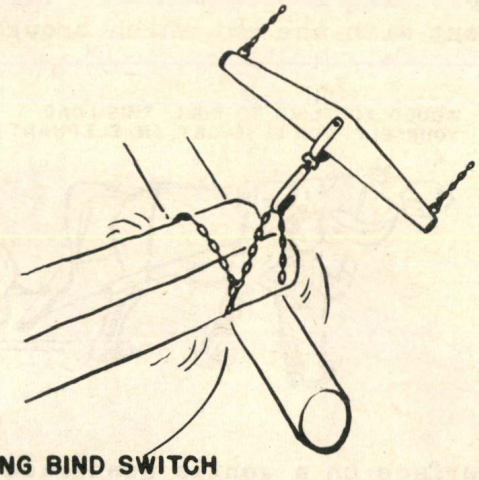
If some long stubs have been left on the log by the choppers it is good business for the teamster to cut them off to reduce their braking action. He should, however, not make a practice of doing this portion of the woodcutters' work.

In starting the load do not hurry the horse by whipping or by jumping it into its collar. If the load is caught by a root or some other obstruction, use a peavy, or get a rolling bind on the chain that will help the horse to do the job. To continually ask the horse to jerk at a load which is beyond its power to move is foolish.

When the load starts down the trail it is best to walk behind rather than alongside. Many teamsters are injured when a log has suddenly rolled across a trail when they were walking alongside. Above all do not attempt to ride on top of a skidding log.



WRONG
TRYING TO PULL STRAIGHT OVER OBSTRUCTION



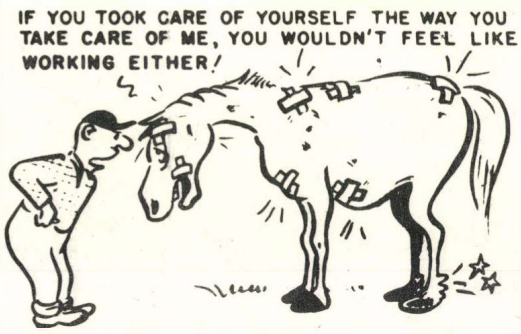
RIGHT
ROLLING BIND SWITCH HOOK ON TO SIDE AND PULLING AT ANGLE FROM OTHER SIDE

Careful guidance, with commands given at the right time, will train the horse to take turns in the trail properly, hugging the outside, and to enter the yard or skidway at the correct angle to place the load where it is wanted. Some teamsters cause delay to themselves and to the yardmen by stopping sometimes too soon, sometimes "overshooting the mark" thereby placing the load in a bad position in the yard or on the skidway. Careful attention to the time the orders are given the horse and complete understanding between horse and man will result in full-sized loads, delivered promptly and in the right place. A correctly bound load can easily be unloosened, and the horse driven away dragging the chain out from around the logs.

On the return trip the teamster can frequently aid the horse from being hung up by stepping on the skid chain just as the whiffletree is about to encounter an obstruction, thus lifting it over. The return trip can frequently be made over a shorter route than that used in coming in, especially in steep country.

Care of Horses

Except on very small jobs, grooming the horses, shoeing, and treatment of injuries and sickness are not the teamster's responsibility so very little will be said about them here. There are some things, however, about the care of horses that the teamster should know.



He should be particularly alert to anticipate harness sores. If these are noticed and treated early, when they are little more than slight swellings, a long lay-off of the horse in the barn may be prevented. The places where such sores are most likely to occur are around the mouth from too tight a bridle, or from rough handling; at the top of the head from too tight a bridle; on the shoulders from a badly fitting collar; at the rump from a chafing breeching strap; on the back from the back pad or under the belly from rough or too tight belly band; and on the legs or at the heels from chafing trace chains or caulking.

When such injuries are located the source of the trouble should be eliminated. Usually it will require adjustment, repair, or replacement of parts of the harness. Then the injuries should be treated, being careful that the solutions used are not so strong that they will aggravate rather than help the injury. Cold, damp, clean dressings may be enough to reduce a slight swelling. If a sore has developed the

hair around it should be clipped and a mild antiseptic applied. Salt water is good if nothing else is at hand. A mixture of one part 2½% iodine solution to three parts castor oil is not too strong. Carbolic oil prepared by a druggist is also good.

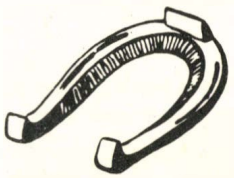
After sterilizing, the wound should be dried off, and some healing salve rubbed in the wound with clean fingers. Tar is worse than useless. It may cause the injury to become a lot worse. A clean dressing should be used over the wound, if the horse is able to keep on working.

Cleanliness is very important in keeping horses in good condition. The stable should be kept clean, reasonably warm, and well ventilated. Horses should be groomed about 15 minutes every week-day, for a half hour on Sunday.

It is also a good idea to cut down on the oats ration over the week end, when the animals are not working. Substitution of bran for some of the oats will have a laxative effect, and help keep them in good condition.

The type of shoes and the way in which they are applied is very important. For horses working in the woods, and not on ice, sharp caulks are generally inadvisable. For summer use, shoes with low, flat caulks as illustrated below will give a firm footing under most conditions. In the winter longer sharper caulks are needed, similar to those on the snowball shoes illustrated.

MUD SHOE



SNOW BALL SHOE

It is very important that the shoes be fitted to the foot of the horse, rather than trimming the foot to fit the shoe. Much of lameness of woods horses is caused by poorly fitted shoes.

The hoofs should be kept clean. Dirt, and especially manure, should not be allowed to accumulate for long on the hoofs, especially in the frog furrows. Trimming the hoofs should not be done too often. Once a month, or once every six weeks should be frequent enough. The heel of the hoof grows slower than the front and needs less trimming.

When a horse gets sick it is best to call a veterinarian, or if the stable boss is capable let him treat it. Many of the home remedies for sick horses do more harm than good.

A good woods horse is more than a valuable piece of equipment, it is a living, breathing, thinking part of the job, and it will repay good care.

Feeding Horses

It is usually the stable boss's duty to feed and water and clean the horses at night. The teamster is frequently responsible for feeding and harnessing his horse in the morning, and taking out feed for use at noon.

The feed should be clean. Hay, if dusty, should be shaken out. Oats should be fed from a nosebag or feed box, rather than off the ground where dirt will be taken with them. The bit should be removed from the horse's mouth during feeding, and if possible in extremely cold weather, the feed should be slightly warmed. Immediately after feeding, the horse should not be worked very hard. A full hour should be taken for lunch.

A horse weighing about 1500 pounds needs about 24 pounds of hay and 12 pounds of oats per day.

In cold weather the horse should be blanketed during the lunch hour and during any long stops at other times of the day.

SOME MANUFACTURERS OF SKIDDING EQUIPMENT USED IN THE NORTHEAST

American Logging Tool Co., Ivart, Michigan (1, 2, 3, 5)

Dixie Logging Tool Company, Chattanooga, Tenn. (1, 2)

Peavey Manufacturing Company, Brewer, Maine (2)

Leach Company, Oshkosh, Wisconsin (1, 2)

Warren Axe and Tool Company, Warren, Penna. (1,2,3,4,5)

Snow and Neally Company, Bangor, Maine (1,4)

Otaco, Ltd., Orillia, Ontario, Canada (6)

A. Streich and Bros. Company, Oshkosh, Wisconsin (6)

Lindsay Wagon Co., Laurel, Miss. (7)

1. Skidding Chains and Hooks
2. Skidding Tongs
3. Grab Mauls
4. Grab Skippers
5. Log Grabs
6. Yarding Sleds
7. Bummers